



MINNEGAZETTE

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CIRCULATION

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The Minnesota Streetcar Museum operates the Como-Harriet Streetcar Line in Minneapolis and the Excelsior Streetcar Line in Excelsior.

TWIN CITIES GRADE SEPARATIONS

-Aaron Isaacs

The Twin Cities railroad infrastructure was in place before the living memory of most *Minnegazette* readers and we tend to take it for granted, assuming it always was that way. But it wasn't, especially the lines that are grade separated, passing over or under streets and even railroads.

When the railroads were built throughout the Twin Cities, they weren't elevated or located in trenches, but laid on the ground. Where they crossed streets, with few exceptions, it was at grade level, often at an odd angle that sliced through residential blocks and sometimes passed directly through street intersections. Even in those pre-automobile days, however, the public was concerned about train delays, whistle noise and the safety of crossing the tracks. For their part, the railroads faced the cost of hiring crossing guards at busy streets (this was before automatic grade crossing lights and gates), plus the cost and disruption of grade crossing collisions. By 1880, there were well over 100 grade crossings within the city limits of Minneapolis and St. Paul.

Western Avenue and Como Avenue, seen here in 1949, bridged the Great Northern's four-track mainline in 1895 and 1886 respectively. Norton & Peel photo



Front cover: Railroads and auto traffic have never mixed well. The solution was grade separation. This is North 7th Street near downtown Minneapolis in 1949, as the original 1896 viaduct over the Minneapolis & St. Louis (foreground) and Great Northern is replaced by a newer structure. At upper right is the GN refrigerator car yard. The new Twins stadium site is just out of the picture at right. Minnesota Historical Society collection.

Inside front cover: The Milwaukee Road was never grade separated, and cut diagonally across the street grid on its way south from the Minneapolis depot. This is 8th Street, crossing eleven tracks at the north end of the coach yard. The Milwaukee 4-6-2 is backing downtown to pick up its train at the depot. The LRT now passes under I-94 here. The coach yard is now the Hiawatha LRT shop complex. Minnesota Historical Society collection.



It's 1892 and the Washington Avenue N. bridge over the Great Northern is nearing completion. Interestingly, there doesn't appear to be streetcar overhead wire, even though this line was electrified in 1890. Perhaps passengers are walking across the bridge to catch a shuttle car. In 19__, the Minneapolis & St. Louis will replace that mud puddle with a depot.

intersections, such as the NP, Omaha Road and Soo Line across Plymouth and Broadway in north Minneapolis, the Milwaukee at Selby, Snelling and Prior in St. Paul, and the NP at Lexington, Dale, Maryland, Rice and Jackson Streets in St. Paul. These improvements solved the worst of the problems. Construction of the new St. Paul Union Depot in 1920-23 grade separated the depot's west throat from the Sibley and Jackson Street access to the city's steamboat landing.

There were two distinct generations of grade separations, based on materials used. Those from the late 19th century were framed in steel, often with wood decks and sidewalks. They were replaced in the 20th century by heavier and more durable concrete structures, and that is what we see today. Looking at all the grade separation projects

around Minneapolis and St. Paul, none of the pre-1900 bridges survive. The steel 1891 Hamline Avenue footbridge over the Great Northern, rebuilt in 1911, is still intact. Also still carrying trains is the obscure 1902 bridge over East 4th Street near the St. Paul Union Depot. The recently replaced Washington Avenue bridge over the Great Northern on the north edge of downtown reused the original bridge's through truss as a decorative element, but it carries no load.

After World War II, additional grade separations largely became a public sector responsibility. Examples include the Soo Line at Osseo Road, the Northern Pacific at Snelling Avenue, and the Milwaukee Road at West 7th Street and Vandalia Street. A number of crossings on lightly traveled streets were simply closed and barricaded. All

the existing pre-1900 bridges were replaced. And, of course, the train/auto conflict was sometimes solved by abandonments and downgrading. Today, there are only six grade crossings within Minneapolis and St. Paul that see heavy train traffic, and only two of those also have heavy auto traffic. That may explain the controversy that surrounded the Hiawatha Line, which suddenly introduced over a dozen new places where heavy auto traffic must yield to frequent trains.

The Northern Pacific (bottom level), Great Northern (mid-level at right), Omaha Road (mid-level at left) and Westminster Street (steel overpass) stayed out of each other's way at Westminster Junction in St. Paul. Minnesota Historical Society collection.



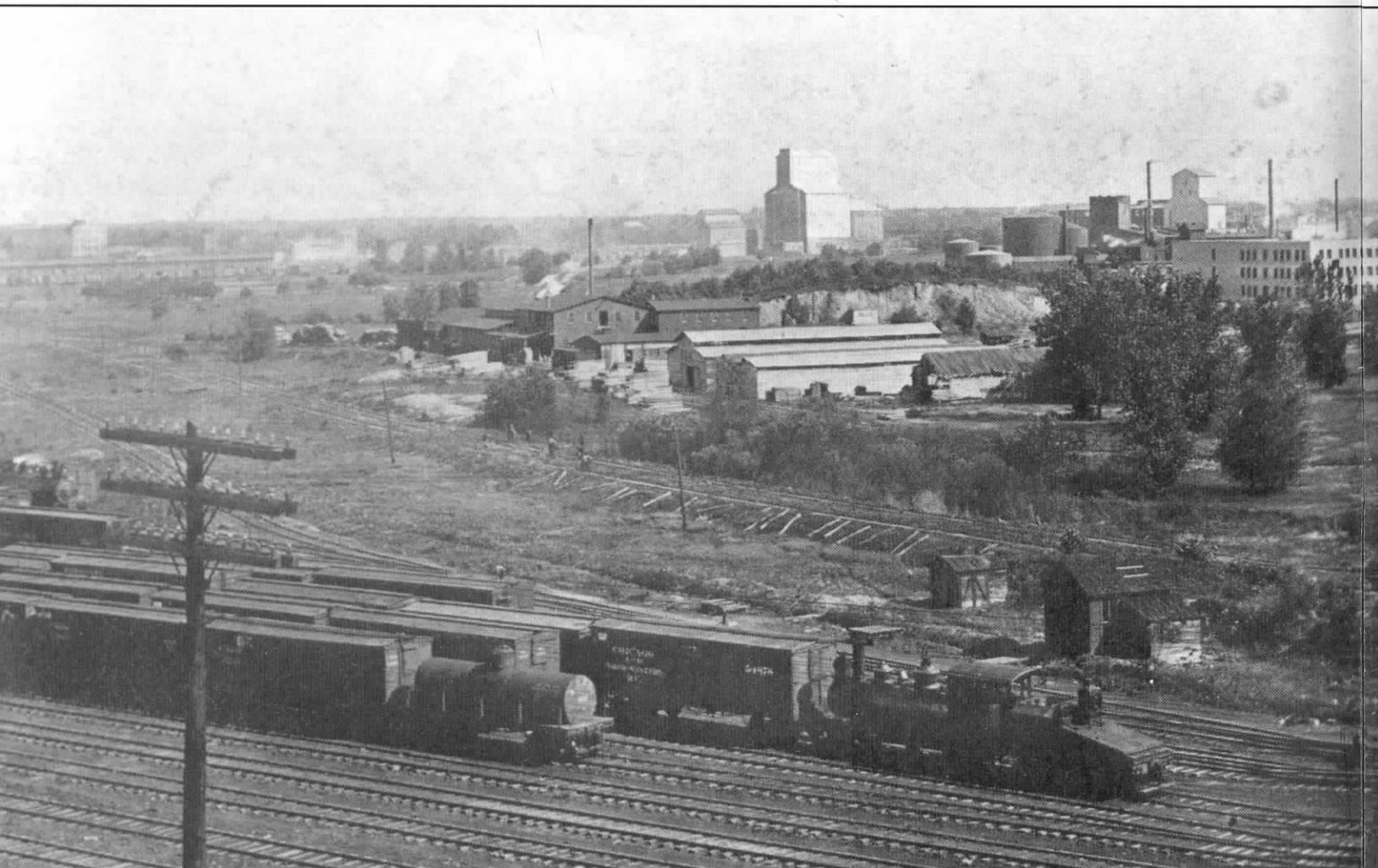
Forest Street (foreground) and Earl Street (in the distance) span the Northern Pacific and Omaha Road (at right) on the east side of St. Paul in 1928. Northern Pacific photo, Lorenz Schrenk collection.



*LAKE STREET
Minneapolis,
C. M & St P Ry. Portion.*



In 1916 the original wooden Lake Street bridge over the Milwaukee Road (left) and Minneapolis & St. Louis (right) near Lake Calhoun was replaced. Raymond Avenue spanned the Great Northern and the north end of the Minnesota Transfer's yard in 1900. The wood deck and sidewalk were typical



BRIDGE
S, Minn.

* M & S L R. R. Portion →



replaced with a more permanent concrete structure. MTM collection.

re typical of these steel structures. Minnesota Historical Society collection



OTHER GREAT NORTHERN TWIN CITIES GRADE SEPARATIONS

St. Paul Union Depot to Minneapolis Great Northern Depot to St. Louis Park

3rd Street 1886/1930
4th Street 1902
6th Street 1891/reinforced 1931 (replaced by I-94)
7th Street 1884/1929
Lafayette Avenue 1883/1889/ modern replacement
Williams Street (Westminster) 1929/1953/ now gone
Mississippi Street 1885/1918/ modern replacement
Jackson Street 1884/1940
Rice Street 1884/1900/ modern replacement
Western Avenue 1886/1914/ modern replacement
Como Avenue 1895/ modern replacement
Dale Street 1890/ modern replacement
Lexington Avenue 1891/1936
Hamline Avenue footbridge 1891/1911
Snelling Avenue 1880/1900/ modern replacement
Raymond Avenue 1900/ modern replacement
Union Yards footbridge 1946, now gone
Northern Pacific "A" Line (now Intercampus Busway) 1884/1907/modern replacement
17th Avenue footbridge 1949/ moved to just west of University Avenue
15th Avenue and 4th Street 1883/1911/ modern replacement
14th Avenue 1883/1902/ modern replacement
University Avenue 1883/1953/ modern replacement
1st Street 1892/ modern replacement
2nd Street 1893/1928/ modern replacement
Washington Avenue 1892/ replaced recently retaining original through truss as ornament
3rd Street 1893, gone
4th Street 1892, gone
5th Street 1892/1924/modern replacement

7th Street 1896/1950/ modern replacement
Electric Short Line Terminal 1913, gone
Royalston Avenue 1882/1905/ modern replacement
Glenwood Avenue 1882/1905/ modern replacement
Lyndale Avenue 1890/1936/ modern replacement
Laurel Avenue 1891/1927/ gone
Wayzata Boulevard 1890/1953/replaced by I-394
Cedar Lake Boulevard 1883/1917/ modern replacement
Cedar Lake Avenue 1883/1936/gone, then recently rebuilt as footbridge
Dan Patch Line 1915
Louisiana Avenue 1883/1953

Minneapolis Great Northern Depot to Union Yard via Minneapolis Junction

Nicollet Street (on Nicollet Island) 1893/1925/ modern replacement
Main Street 1893/1926
2nd Street NE 1893/1930/ replaced recently
University Avenue 1893
4th Street NE 1893, gone
5th Street NE 1893/ modern replacement
7th Street NE 1893/ modern replacement
Central Avenue 1893/ modern replacement
East Hennepin Avenue 1921/ modern replacement
10th Avenue SE 1894/1921/ modern replacement
15th Avenue SE 1890/1921

GN Minneapolis Junction to Northtown

Spring Street 1922
Central Avenue and Broadway 1894/ modern replacement
University Avenue 1908/1938/ modern replacement
St. Anthony Boulevard 1910/1926





University Avenue originally spanned the Minnesota Transfer yards, viewed from the roof of the Transfer's offices. In the 1930s, it was replaced by a pair of underpasses, one of which survives today. The William Crooks makes a celebrity appearance next to the Transfer's office building, now the site of a Menard's store. Minnesota Historical Society collection and MTM collection.



The Milwaukee Road eliminated grade crossings along its Short Line at 31st and 36th Avenues South, and installed a pedestrian tunnel at 38th Avenue to retain access to Brackett Park. This is 36th, where the East 25th Street streetcar line crossed. This is the classic "railroad up 2/3, street down 1/3" arrangement. Starting this year, the Midtown Greenway bikeway was opened across this bridge, sharing the right of way with the remaining single track. MSM collection.

Streetcars and grade crossings

Railroad grade crossings represented nothing but trouble and expense to the streetcar system. Slow or stopped trains that blocked crossings threw the streetcar schedule into chaos. Collisions were always a risk, and streetcar company policy required the conductor to dismount and flag the streetcar across, unless there was a full time flagman stationed at the crossing. The railroads were there first, so the streetcar company bore the burden of installing and maintaining the crossing diamonds. To minimize this expense, most streetcar lines narrowed to single track for the crossing, requiring streetcars to run against auto traffic in one direction, an unsafe practice in its own right. To prevent a collision if a streetcar stalled because its pole left the wire, an electrically charged wire mesh trough was installed above the wire to catch the pole and provide power to clear the crossing.

When running on its own private rights of way, TCRT did a certain amount of grade crossing separation on its own. Most notable was the long, S-curving viaduct that took it over the Milwaukee Road, Minneapolis & St. Louis and Great Northern in Hopkins. Streetcars spanned the Omaha Road in east St. Paul, the M&StL entering Excelsior and the Milwaukee Road's spur track into Fort Snelling. Despite all the efforts to eliminate streetcar/railroad grade crossings, 15 of them remained in 1950.

TCRT also separated its private right of way from some streets. This happened primarily along the Como-Harriet in Como Park and between 36th Street and Linden Hills Boulevard. Less well known was the Inter Campus line's underpass of Cleveland Avenue. To keep them from walking across the tracks at high traffic locations, TCRT built pedestrian underpasses at Excelsior Dock Station, Lake Harriet and Wildwood Park. Como Park's station had (and still has) a pedestrian bridge over the tracks.



The 2nd Street line crosses the Northern Pacific "A" Line on Lowry Avenue. This is the usual arrangement, a single streetcar track to minimize crossing maintenance. The dewiring trough above the overhead wire shows clearly. Frank Butts photo, MSM collection.
In 1953, an eastbound Inter Campus Special passes under Cleveland Avenue on the north edge of the University of Minnesota's St. Paul campus. Note the boarding platform. Arthur Rusterholz photo, MSM collection.





TCRT had to transport thousands of passengers quickly and reliably to Lake Minnetonka, and crossing three railroads at grade in Hopkins was not acceptable. The result was a long S-curving viaduct that hurtled over the Milwaukee Road (foreground), then the Minneapolis & St. Louis and the Great Northern. Hopkins Historical Society collection.

Northeast Minneapolis

By 1920, grade crossings remained a major problem in Northeast Minneapolis, where the GN and NP slashed across the street grid at an angle, with over 20 at-grade crossings. The only one that had been previously fixed was the elevation of the busy Broadway and Central intersection over the GN in 1894. Auto traffic wasn't the only thing delayed by passing trains. The NP also crossed busy streetcar lines on Johnson Street and Central Avenue.

In 1922, the Minneapolis City Council passed an ordinance requiring the two companies to elevate their tracks through Northeast. It would require construction of 17 bridges and the closure of ten neighborhood streets. When it was finished, only two grade crossings remained, on the GN at lightly traveled 12th and 14th Avenues NE.

The Minnesota Historical Society has the corporate files of the Northern Pacific, including its Engineering Department. Within these files are extensive construction reports on all the northeast Minneapolis bridges, including many excellent photos, and some of those appear in this article.

In general, two-thirds of the needed overhead clearance was achieved by raising the railroad. One-third came

from lowering the streets as they passed under the bridges. Raising the tracks was complicated by four factors.

1. Two of the bridges, at Washington Street and Lowry Avenue, were shared with the Great Northern and construction schedules for eight additional bridges had to be coordinated between the two railroads.

2. It was necessary to build temporary bypass tracks for the streetcars that crossed at Central and two points on Johnson.

3. The numerous industrial sidings along the line had remain at the old track level. This required a completely new set of ramped connectors between the main lines and the sidings. The East Minneapolis rail yard near Johnson had to be raised.

4. The grade separation was completed in five phases spread over nine years. During that time the two main lines had to be kept fluid despite numerous temporary shooflies and up/down grade changes.

The bridges were erected in groups between 1924 and 1931.

1923 NP Central Avenue

1924 NP 18th Avenue, NP Monroe St. north ("A" mainline), NP Monroe St. south ("E" Line), GN Monroe Street, NP 19th Avenue, GN 19th Avenue

1925 NP Johnson Street north ("A" mainline), NP Johnson Street south (M&D Line to Minneapolis Junction)

1926 NP Broadway, NP Buchanan Street, NP Fillmore Street

1931 NP 22nd Avenue, GN 22nd Avenue, combined NP/GN Washington Street, combined NP/GN Lowry Avenue 1931

The 1931 completion of the Washington Street bridge made possible the extension of that streetcar line from 22nd Avenue to 27th Avenue, the south edge of the Soo Line Shoreham Shops. In a related note, the North West Terminal streetcar line on East Hennepin Avenue was straightened and shortened when the GN completed its overpass there in 1921. Before that the streetcars had to detour via 8th Street SE, using the 10th Avenue underpass which had opened in 1894.

The oldest of the northeast bridges is now 83 years old. Most are still doing the job for which they were designed, and experiencing much higher traffic levels and loadings than ever. Only one is gone. The M&D branch to Minneapolis Junction was eliminated by I-35W, along with its bridge over Johnson Street. The NP Monroe south bridge leading to the abandoned Mulberry line along 18th Avenue NE still stands, but minus its tracks.



5-17-23 The Central Avenue streetcar shoofly is being laid across the NP mainline. The diamonds in the distance anticipate the NP shoofly.

8-2-23 Workers are forming and pouring the overpass. Note the original mainline/trolley shoofly diamonds in the foreground.





6-14-23 NP 0-8-0 #1180, just three years old, waits for a streetcar to clear the crossing of the two shooflies. It was guarded by someone in that little shack.





WORK ON CENTRAL AVE. NORTH OF N.P. BRIDGE

AUG. 29 19

8-29-23 The new grade of Central Avenue is shaping up as workers shovel gravel from the bed of a TCRT work car.
 9-7-23 The streetcar shoofly was placed to avoid the west bridge pier, and a gap was left in the fill to keep it passable.
 The temporary trestle carried the NP over the new lowered grade of Central Avenue. It appears that the permanent streetcar and mainline had to open simultaneously. Wonder how many days of service interruption resulted from that last move.



CENTRAL AVE. FROM SOUTH

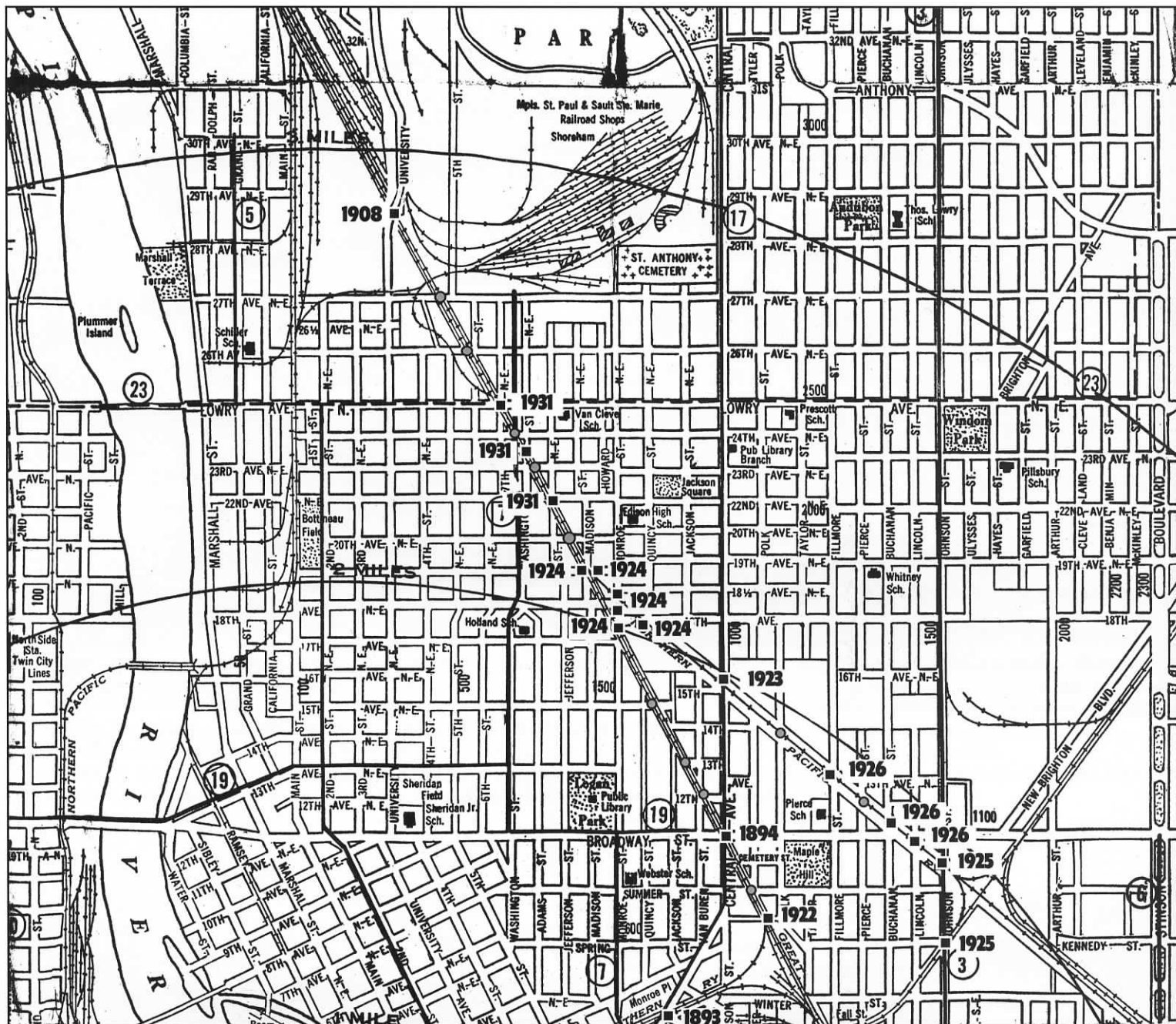
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19



10-4-23 Both shooflies have been abandoned. The streetcars are using one of the two final tracks, as the paving and track crews finish the rest of the street.
 3-28-24 The finished Central Avenue underpass.





- BRIDGE
- GRADE CROSSING CLOSED

5-16-24 Here are two views of the 18th-19th-Monroe area as it looked before the start of construction. Top: The NP "B" line at right angles curves to meet the GN at left. In the foreground crossing Monroe Street is the NP "E" line, also called the Mulberry line, that followed 18th Avenue north to a connection with the NP "A" line at Main Street NE.





This pre-construction photo looks west down the "E" line (foreground) and the GN. In the distance is a streetcar on Washington Street.



6-25-24 The 18th-19th-Monroe project was completed in 1924, a year after Central Avenue, which is in the distance. The shoofly is in place, on the alignment of the local industry switch lead.



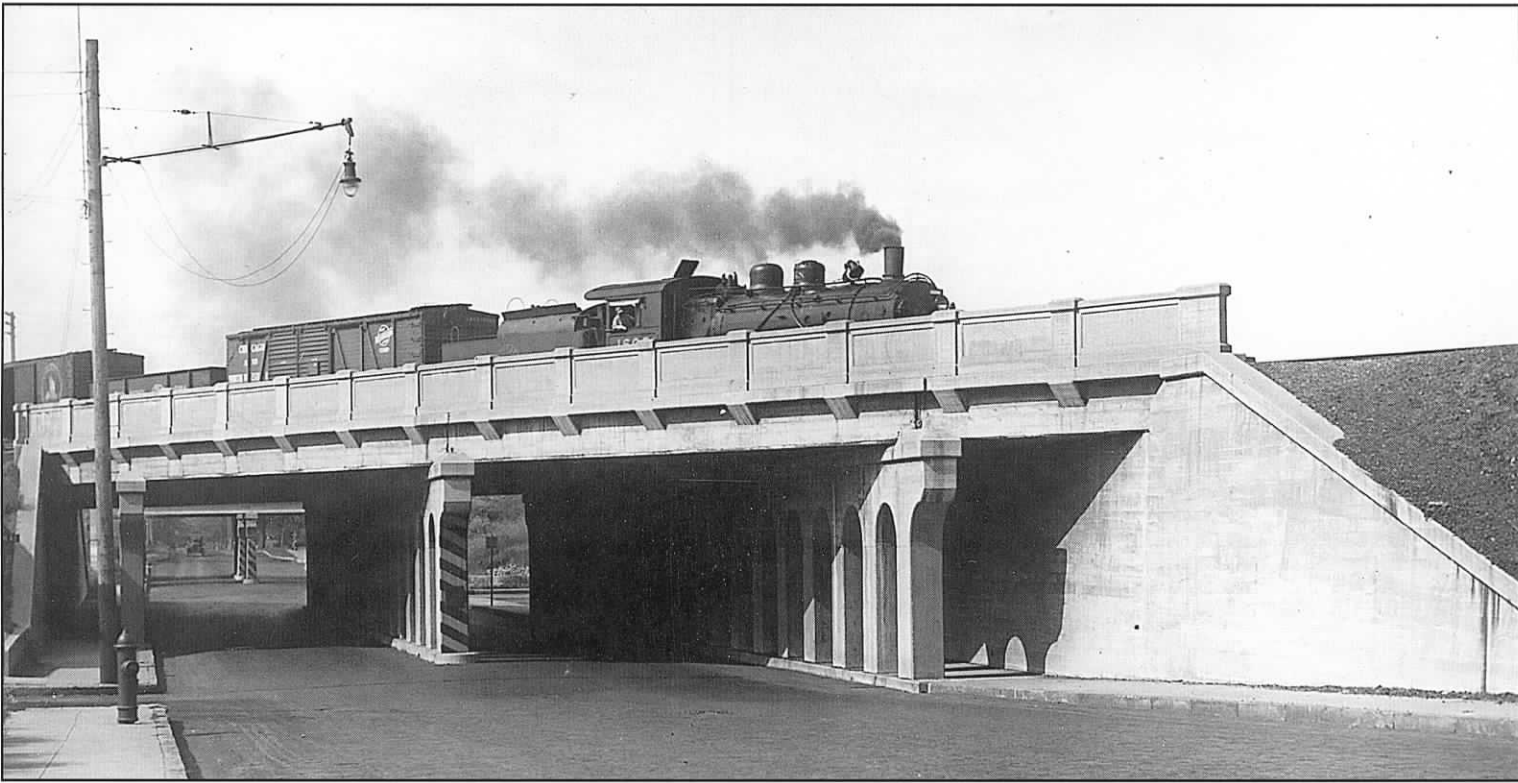
8-4-24 The 18th Avenue bridge girders are placed by a steam crane. The old work train service car is sitting on the east side switch lead, which remained at ground level, connected to the mainline by new ramps.



3-27-24 (above) and 10-23-24 below). The photographer happened to take the same angle before construction and during its final stage. He's looking southeast along the NP "B" line, with the GN in the foreground and the NP "E" line at right.



Looking East across 19th Ave.



An eastbound Great Northern freight passes over Monroe Street on one of the cluster of six bridges jointly constructed by the GN and NP in 1924. Two are visible in the distance. Minneapolis Journal photo, Minneapolis Public Library collection.

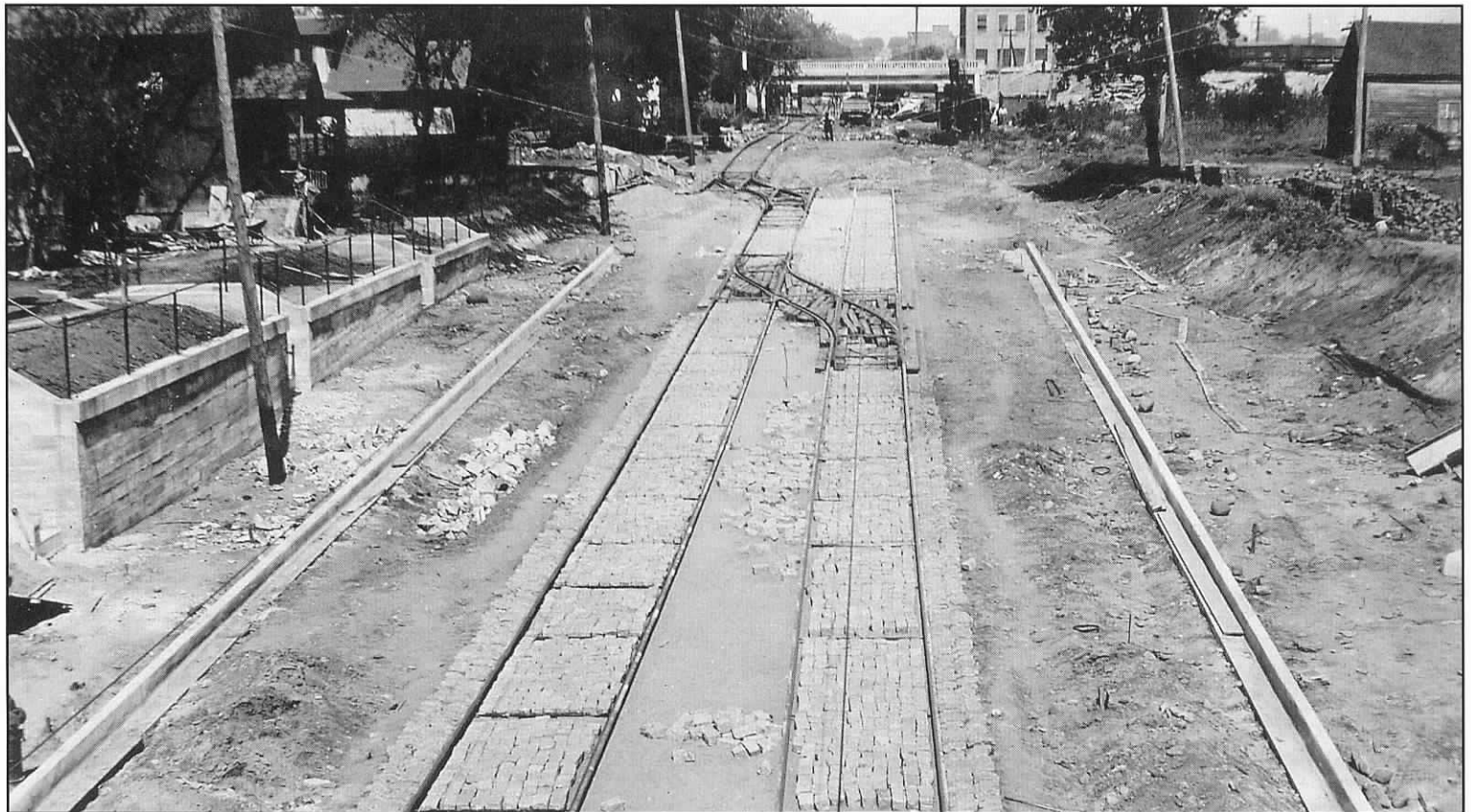
4-16-25 The Johnson Street crossing as it looked before construction. Grade separation eliminated the need for 24 hour a day staffing of the watchtower.





5-14-25 The Johnson streetcar shoofly under construction. Note that it's laid directly on top of the old pavement and tracks.

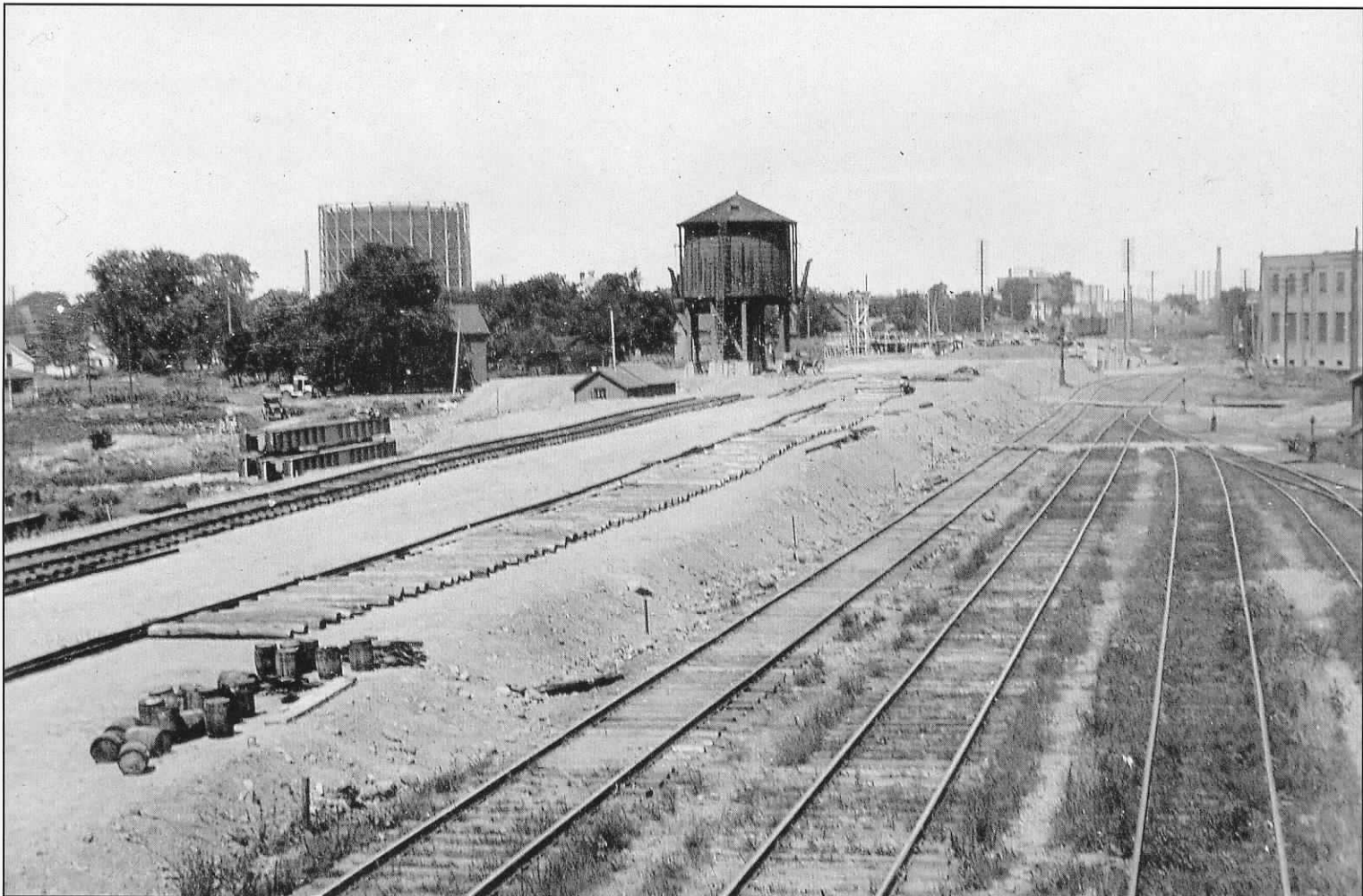
9-16-25 The camera is on the new south overpass, looking toward the main line bridge. The pavers are laid loose around the streetcar tracks. Pre-constructed, portable switches are in place to tie in the shoofly.





The two-spouted water tank east of Johnson Street had to rise along with the tracks. This was accomplished by jacking it on cribbing, inserting new, taller concrete supports resting on the old grade, and filling around the base to the new track height.

7-23-25 Here's the water tank after the fill was placed around its base. The low level shoofly is in the foreground.





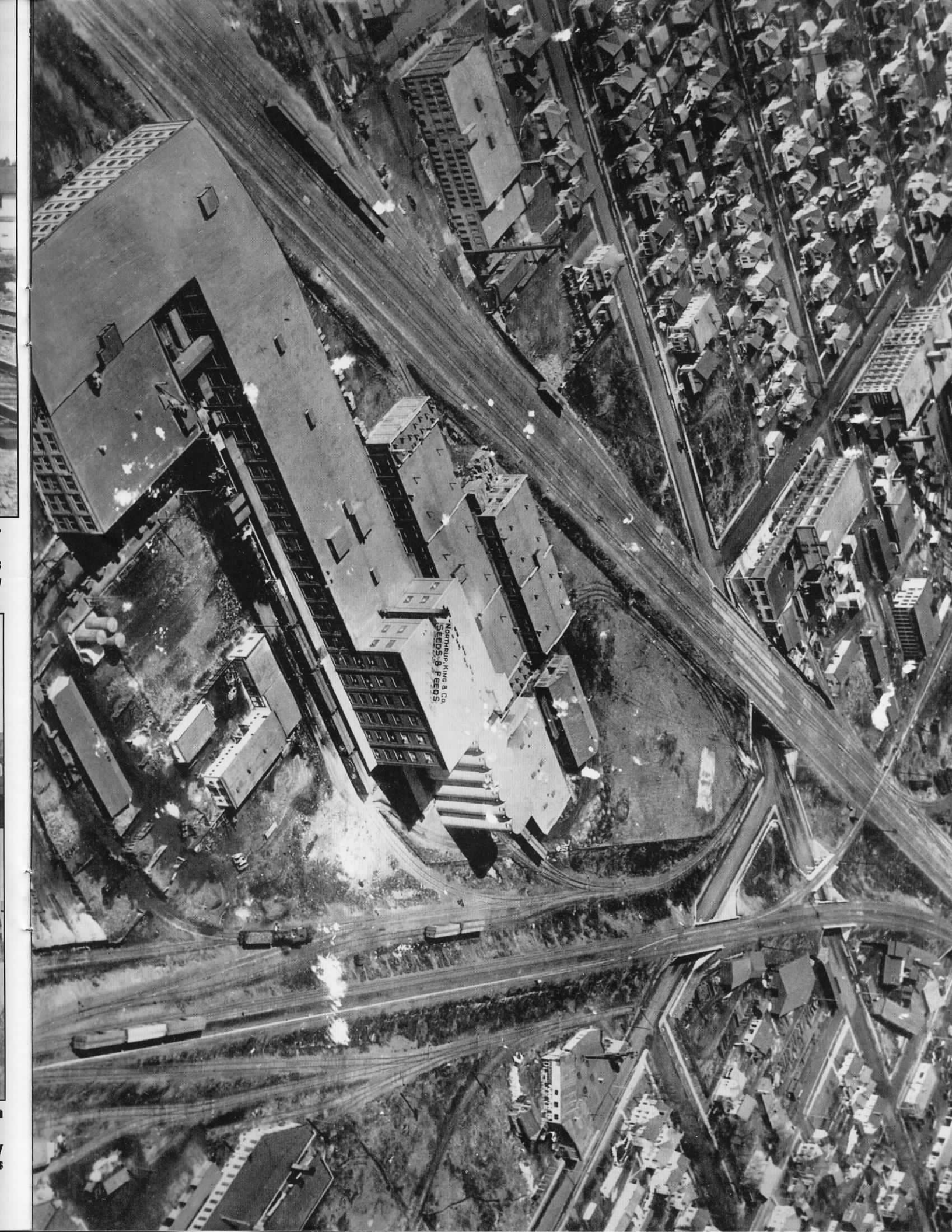
7-3-25 Having crossed Johnson Street on the new bridge, the shoofly dives down to ground level, bypassing construction of the Broadway-Buchanan-Fillmore section, which would open the following year.

The end result--Johnson Street was bridged twice in 1925. In the foreground is the NP's old Minneapolis & Duluth line that fed industries and interchanged with the GN at Minneapolis Junction. It was removed by the construction of I-35W. In the distance is the NP "B" line, now the BNSF main line and carrying more traffic than ever. Minneapolis Public Library collection.



Inside rear cover: Here's part of the finished Northeast Minneapolis project. Six of the bridges are visible spanning (top to bottom) 19th Avenue, Monroe Street and 18th Avenue. Northrup King Company photo, Minnesota Historical Society collection.

Rear cover: To eliminate the horrible six-way crossing of Franklin Avenue, Cedar Avenue and the Milwaukee Road, the Minnesota Highway Department diverted Cedar Avenue to the east, passing under the tracks just north of 24th Street. In 1950 the streamlined Hiawatha is headed for Chicago. This bridge now serves the Hiawatha light rail line. Minnesota Historical Society collection.







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